Summer 2007

Environmental Standards Update

Outcomes from the 56th Session of IMO's Marine Environment Protection Committee

By Richard Everett, Ph.D., USCG

The International Maritime Organization's Marine Environment Protection Committee (MEPC) convened for its 56th session July 9-13, 2007, in London. Delegations representing 87 member states, and 47 other parties comprised of non-governmental, intergovernmental, and United Nations agencies participated. Several issues on the meeting's agenda were of particular importance to the U.S. delegation, including particularly sensitive sea areas (PSSA), the translocation of harmful organisms by ships, ship recycling, and MARPOL Annex I.

Particularly Sensitive Sea Areas

The Committee approved the designation in principle of the U. S. Papahānaumokuākea Marine National Monument as a Particularly Sensitive Sea Area. Further consideration of associated protective measures for this PSSA, as well as expansion measures of six other existing PSSAs, and the establishment of a ship reporting system for controlling and monitoring vessel traffic in the vicinity of the PSSAs occurred during the July 23, 2007 meeting of the subcommittee on Safety of Navigation, but the outcomes were not available as this update was being prepared. Final designation of the Papahānaumokuākea PSSA will be considered at the next meeting of the MEPC, in March-April 2008.

Translocation of Harmful Organisms by Ships

The committee adopted two more implementing guidelines in support of the Ballast Water Management (BWM) Convention: "Guidelines for additional measures regarding ballast water management including emergency situations – G13," and "Guidelines for risk assessment under Regulation A-4 of the ballast water management convention – G7." Although not specifically called for in the BWM Convention, the Committee also adopted "Guidelines for ballast water exchange in the Antarctic Treaty Area." These latter guidelines were developed by parties to the Antarctic Treaty, and proposed to the MEPC as a proactive interim measure until the Ballast Water Management (BWM) Convention enters into force.

The Committee completed its review of the availability of technology needed for vessels to meet the requirements of the BWM Convention. The Committee determined that while there is technology available, having it available for installation on all vessels required to meet the requirements of the Convention by January 2009 might be problematic. Further consideration of the course of action required by the Committee in light of this uncertainty will occur at the next meeting of the Sub-committee on Bulk Liquids and Gases (BLG), scheduled for February 4-8, 2008.

In a significant advance toward the availability of BWM technology, the Committee granted both Basic and Final Approval for the PureBallast system submitted by Sweden and Norway, and granted Basic Approval to the NK system submitted by the Republic of Korea.

The Committee decided to take on a new high priority work item directed at minimizing the risks of translocating harmful organisms via biofouling on vessels. Initial discussion of potential international measures will take place at the next meeting of the BLG Subcommittee.

(Continued on page 2)

(Continued from page 1)

Ship Recycling

The Committee convened a work group on ship recycling, which further developed the draft International Convention On the Safe and Environmentally Sound Recycling of Ships, and related guidelines. Further work on the draft convention will take place at an intersessional meeting of the working group scheduled for January 2008.

Air Pollution

The committee considered 5 topics related to air pollution: greenhouse gas (GHG) emissions, exhaust gas cleaning guidelines, washwater criteria for exhaust gas cleaning systems, the NOx technical code of MARPOL Annex VI, and the agenda for an intersessional meeting on air pollution.

On GHG emissions, the Committee reaffirmed the program of work, which will culminate at the 59th meeting in July 2009, when the Committee negotiates options for addressing these emissions. Substantial progress was made on reorganization of the exhaust gas cleaning guidelines, and additional consideration of these guidelines will be undertaken during an intersessional work group meeting related to amendment of MARPOL Annex VI. Draft washwater criteria were developed for SOx exhaust gas cleaning systems, and these will receive further consideration at the intersessional meeting. Considerable progress was made on modifications to the NOx Technical Code. The intersessional meeting of the air pollution workgroup will take place in Berlin, Germany, from 29 October to 2 November, 2007.

Other Issues

Finally, the Committee approved two draft circulars that provide greater clarity to operating companies on the expectations of proper implementation of the International Safety Management Code; and agreed to add two new items to the Design and Engineering (DE) Sub-committee's work agenda, on MARPOL Annex I issues related to electronic oil-record books and retrofitting of pollution prevention equipment.

When made available for release by the IMO Secretariat, the Final Report of the 56th session of the MEPC may be requested by U.S. citizens from the U.S. Coast Guard via our web site at: http://www.uscg.mil/hq/g-m/mso/IMOMEPC.htm.

Operation of the National Ballast Information Clearinghouse: A Day in the Life of a Ballast Water Report

By Kelly Ryan and Whitman Miller, Ph.D. SERC

The National Ballast Information Clearinghouse (NBIC) is a joint program of the Smithsonian Environmental Research Center and the U.S. Coast Guard that collects, analyzes, and interprets data on the ballast water management practices of commercial ships that operate in the waters of the United States. The principal aims of NBIC are to quantify the amounts and origins of ballast water discharged in U.S. coastal systems and to determine the degree to which such water has undergone open-ocean exchange or alternative treatments designed to reduce the likelihood of ballast-mediated invasions by exotic species.

Ballast water data come to NBIC in the form of Ballast Water (BW) Reports that are processed and uploaded into the NBIC database. These reports provide data on, among other things, a vessel's arrival port, last port of call, and the origin, age, and management of ballast water that is being discharged into U.S. coastal waters.

NBIC currently receives approximately 340 ballast water reports daily (~120,000 annually). In the early days of the program, the vast majority of BW Reports were transmitted in hard-copy format by fax or postal mail. A major drawback to this method of submission was the time and labor required to manually enter the ballast information. With limited data en-

(Continued on page 3)

(Continued from page 2)

try personnel, significant backlogs developed, which then led to substantial lag times between receipt and upload into the NBIC database.

In light of this, NBIC and the Coast Guard have strongly promoted electronic transmission of BW Reports, either through e-mail or online. Currently, 89% of BW Reports are transmitted in electronic format. Data from electronically transmitted forms are processed and uploaded to the database through the use of a series of computer scripts that 1) assess data quality and 2) prepare and distribute customized e-mail responses to each sender, informing them on next actions (e.g., resubmission of an amended form containing an itemized list of corrections). These innovations have increased the quality of BW Report submissions, while at the same time, further educating ship operators on the proper approaches for reporting their ballast information. The bulk of BW Reports are now received as attachments to e-mail messages. Each of these forms is analyzed and uploaded within two business days of its receipt.

Initially, even electronically transmitted data had limited scope and utility. While the automatic upload of reported data to the database was helpful, these data underwent only minimal quality control at the upload stage—mainly ensuring that the data were in the proper format for the data field type (e.g., dates, numbers, and text are valid). The database was then reviewed manually to detect further errors, such as nonsensical dates or volumes, or misspellings or abbreviations of port names. This manual review was time consuming and contributed to a substantial lag between the time when data appeared in the database and when those data could be considered vetted and ready for use.

In October of 2005, a new data processing regime was introduced by NBIC. This new system consists of a series of automated filters. These filters allow the data to be closely checked for accuracy and standardization before upload into the database. Using this new system, the database is now, by and large, current and accurate with minimal delay between data receipt, upload, and vetting. These same filters are also being applied to the small percentage of data that must still be manually entered into the database. This consistency of treatment among BW Report submission avenues ensures that all data undergo a similar series of checks for quality control and completeness, regardless of the format in which they are transmitted to NBIC.

For each electronic submission, an e-mail message is returned by NBIC to the sender. This message comes in the form of either an "NBIC Notice," if the form in question contained errors detected by NBIC, or an "NBIC Receipt," if the submitted form was in the proper format and correctly completed. Thus, the sender is prompted directly to correct any errors and resubmit an amended report to NBIC.

One downside to alerting vessels of their reporting errors is the potential for an artificially inflated reporting rate, due to multiple BW Reports for a single arrival. To detect duplicated and amended submissions, a computer program was written to detect them during upload to the database. Once detected, duplicate and amended BW Reports are compared and reviewed by NBIC staff and only a single 'report of record' (the most recent and correctly completed report) is selected for database upload.

NBIC now provides a set of online tools that enable Coast Guard field personnel to access and query the NBIC database for ship arrival and ballast information. A web portal with direct access to the NBIC database is now embedded in the Coast Guard's Marine Information for Safety and Law Enforcement (MISLE) database, allowing Coast Guard personnel to more easily target those vessels they board for ballast water reporting inspections and compliance purposes.

During the past three years, the NBIC has made great strides with respect to how BW Reports are received, processed, and vetted. These technical advancements, in addition to important Coast Guard regulatory changes, have increased both the quantity and quality of ballast water data that are submitted by commercial shippers. Data are now more readily available to the Coast Guard for regulatory purposes. These data are also of greater quality, enabling more rapid and useful analyses.

Clearly, there are lots of challenges when attempting to collect, process, and synthesize the large quantities of information necessary to characterize ballast water delivery and management in the United States. Nevertheless, the

(Continued on page 4)

(Continued from page 3)

Coast Guard and Smithsonian Environmental Research Center have forged a very successful partnership in the creation and operation of the NBIC. As the commercial shipping industry continues to expand and globalize, so too does the threat of invasion by non-native marine species. The people of NBIC and the Coast Guard will continue to work tirelessly every day to help stem this tide.

ETV Ballast Water Stakeholders Meeting

By Richard Everett, Ph.D., USCG

The EPA Environmental Technology Verification (ETV) Program Water Quality Protection Center-Ship Ballast Water Stakeholder Panel will meet Thursday, August 16, 2007, from 8:00 AM – 5:00 PM. The meeting will be held at the Holiday Inn BWI Airport Conference Center, 890 Elkridge Landing Road, Linthicum, MD.

The meeting agenda includes updates on:

- the Coast Guard's ballast water discharge standard rule-making project;
- the Great Ships Initiative (GSI) in the Great Lakes region, including the status of the GSI ballast water treatment system test site in Duluth, MN;
- the Coast Guard-Naval Research Laboratory validation test of the ETV ballast water treatment system test protocols;
- the ETV surrogate test organism study;
- the outcome of the ETV Ballast Water Tech Panel meeting scheduled for Aug 15;
- the next steps for finalization of the ETV Ballast Water Treatment System Test Protocols; and
- future activities for the ETV Ballast Water initiative.

The Holiday Inn provides complimentary shuttle service to and from BWI Airport, and complimentary parking for people attending events at the hotel. Additional information about the ETV Water Quality Protection Center, including contacts information, can be obtained from the internet at: http://www.nsf.org/business/water_quality_protection_center/index.asp?program=WaterQuaProCen

USCG Continues to Make Progress on the DPEIS for the Discharge Standard

By Mirabelle Oczkowski, USCG

The Coast Guard held a Cooperating Agency Workshop on May 3-5, 2007 in Charleston, South Carolina with the intent of finalizing the Draft Programmatic Environmental Impact Statement (DPEIS). The DPEIS is being prepared under the National Environmental Policy Act (NEPA), and provides key scientific analysis that is critical to the development of the Ballast Water Discharge Standard rulemaking. This rulemaking will set a performance standard for ballast water treatment. Representatives from the Environmental Protection Agency, the National Atmospheric Administration, and the Animal and Plant Health Inspection Service joined the Coast Guard in providing their expertise in reviewing and completing the remaining chapters of the DPEIS.

The first day of the workshop featured presentations from the Coast Guard and Cooperating Agency participants. Coast Guard personnel provided an overview on current ballast water management regulations, the ballast water discharge standard rulemaking, as well as an overview of the NEPA process. Participants also received a presentation on the current state of the DPEIS and the challenges to overcome in the document. Cooperating Agency members offered presentations on their areas of ex-

(Continued on page 5)

(Continued from page 4)
pertise to be incorporated in the DPEIS. These presentations included the concerns of microorganisms as invasive species and the scientific methodology being used to predict the probability of nonindigenous species being introduced in spite of a range of ballast water discharge standards.

The second and third days of the workshop featured breakout sessions, where workshop participants worked together in small groups to review and work on all chapters of the DPEIS. On the final day of the workshop, each group presented their changes and suggestions to the entire workshop audience. Major developments in the review process of the chapters included: clarifying rather than lengthening chapters, restructuring chapters to remove inconsistencies, and using more current and conclusive data to support the results of the DPEIS.

Participants left the workshop with a clearer understanding of the current state of the DPEIS as well as how to proceed in order to complete the document. The Coast Guard is in the process of incorporating all workshop comments, finalizing the DPEIS, and intends to publish it for public review as soon as possible.

Development of the Draft EIS for Dry Cargo Residues on the Great Lakes

By Katherine O'Dell, SAGE Systems Technologies

In September 2006 and April 2007, experts in the fields of Great Lakes ecology and NEPA analysis carried out the sampling and analysis plan that they developed for the Coast Guard. The fall sampling consisted of sonar mapping of the lake bottoms and taking lake water samples for water quality analysis. Samples of the main dry cargoes that are shipped on the lakes were also taken from ships. Analyses included chemical analysis of dry cargoes, nutrient enrichment studies, and bioassays of organisms exposed to dry cargo sweepings. The spring sampling consisted of sediment samples, benthic tissue samples, and water quality parameters at sample locations. Analyses consisted of sediment grain size analysis, sediment chemical analysis, benthic organism identification, analysis of benthic community structure, and laboratory analysis of benthic tissue for chemical parameters.

The results and interpretation of these studies will be presented in the DEIS that the Coast Guard is currently developing. This data will help to determine the environmental consequences from dry cargo residues discharged on the Great Lakes and inform the decision that the Coast Guard makes.

Additional information on the Dry Cargo Residues regulatory project can be found on the Coast Guard Environmental Standards Division's homepage at http://www.uscg.mil/hq/g-m/mso/dry_cargo.htm

Workshop to Scope Regulatory Alternatives for NOBOBs

By Bivan R. Patnaik, USCG

The Coast Guard will hold a workshop in Chicago, IL, in September 2007, to discuss regulatory alternatives to address aquatic nonindigenous species (NIS) introductions into the Great Lakes. The workshop will specifically focus on vessels declaring no ballast onboard (NOBOBs) and the risks they pose.

In May 2005, the Coast Guard held its first NOBOB workshop in Cleveland, OH, immediately following a public meeting with stakeholders who were concerned about NIS introductions and regulating NOBOBs. The results from the public meeting and the workshop led the Coast Guard to implement a policy in August 2005, which strongly encourages NOBOB

(Continued on page 6)

(Continued from page 5)
vessels to conduct best management practices. As this policy has been in place for two years now, the Coast Guard would like to scope out other alternative solutions to continue to reduce the introduction of NIS into the Great Lakes in addition to continuing work on the ballast water discharge standard rulemaking.

Participants at the upcoming NOBOB Workshop will include representatives from the Coast Guard (Headquarters and District Nine), Transport Canada, and both Saint Lawrence Seaway Corporations, as well as scientists from the Smithsonian Environmental Research Center, the National Oceanic and Atmospheric Administration, and various academic institutions.

Proceedings from the workshop will be posted to the docket and made available to the public at http://dms.dot.gov. Once on this web site, proceed to 'simple search' and under 'docket number,' enter 19842.

As NOBOBs are increasing as a national concern, other NOBOB workshops may be held in other U.S. locations in the future.

Assessment of Ballast Water Compliance and Discharge Trends from 2004-2005

By Keith Donohue, LT, USCG

The period between January 2004 and December 2005 represents a time of significant change in the Coast Guard's understanding of ballast water discharge patterns. For the first time, more than 75% of the total U.S. shipping population could be assessed for implementation of ballast water management (BWM) practices, mainly due to increased compliance following the implementation of the mandatory requirements.

Initial analysis of the ballast water reporting data submitted by vessels during this period shows that by far, the largest volume of ballast water reported discharged in the U.S. came from vessels on domestic or coastal voyages to U.S. ports or places. Domestic ballast water moved from one U.S. port or place to another accounted for 71.4% (183.8 million metric tons (MT)) of the total reported volume of ballast water discharged in the U.S. during 2005. Just under half of this domestic ballast water (89.2 million MT) was discharged within the Great Lakes by vessels on transits that kept them less than 200 nautical miles (NM) from shore during their voyage. An additional 10% (24.6 million MT) of the total ballast water reported to have been discharged in the U.S. in 2005 originated from Caribbean or North and South American waters, where vessel transits to the U.S. primarily occurred along coastwise voyages within 200 NM from shore.

Nationwide, approximately 73.7 million metric tons of ballast water was reported to be discharged by foreign arrivals over the full 2004 to 2005 period, an increase of 43.4% over that reported in calendar years 2002 and 2003. Of this volume, 14.8 million MT (20.1%) was reported discharged without exchange and 57.2 million MT (77.6%) was reported discharged with some exchange. However, by 2005, after the implementation of the Coast Guard's national mandatory BWM Program, only 7.2 % of all foreign vessel arrivals reported discharging ballast water without conducting any ballast water exchange (BWE). For those vessels that did conduct BWE before discharging in U.S. waters, a clear distinction arose between those vessels arriving to the U.S. after trans-Atlantic or trans-Pacific voyages and those arriving from coastal or near coast routes from North America, South America and the Caribbean. While greater than 74% of vessels arriving from trans-oceanic routes reported conducting proper mid-ocean BWE 200 NM from shore, more than 77% of vessels arriving from Caribbean, North and South American waters conducted coastal BWE within 200 NM. Even though these coastal exchanges did not meet the current requirement for exchange, in most cases the vessels never transited beyond 200 NM and thus were not required to conduct BWE if the ballast discharged was only that necessary to conduct cargo operations.

Overall estimates from the 2004-2005 reporting data suggest that less than 5% of the ballast water reported to be discharged in the U.S. in 2005 was not compliant

(Continued on page 7)

(Continued from page 6)

with the mandatory BWM Program. After over 9,700 BWM examinations were conducted by Coast Guard personnel, compliance—as measured by the number deficiencies cited—was estimated at over 96%. While results show that the global maritime community has been quick to adopt the mandatory BWM Program, approximately 80% of the ballast water reported to be discharged in the U.S. in 2005 was discharged following coastwise or domestic voyages, all occurring within 200 NM from shore; these transits were not subject to mid-ocean BWE. In its progress to find a solution, the Coast Guard is in the process of developing a ballast water discharge standard and establishing protocols for approving new ballast water treatment technologies.

Shipboard Technology Evaluation Program Deadlines for 2007

By Richard Everett, Ph.D., USCG

The Coast Guard will announce the 2007 application deadline for the Shipboard Technology Evaluation Program (STEP) in the Federal Register. Applications received after the deadline will not likely be reviewed until later in 2008, resources permitting.

There is no formal opening date for STEP, so applications may be submitted at any time, although submissions made prior to the formal announcement may have to wait until arrangements are in place to conduct a review. Also, as stated in the initial announcement of STEP in 2004, review of applications in general is dependent on the availability of resources. The Coast Guard can review up to three applications that are received in 2007. If more than three applications are received, additional resources for reviews will be sought, but the availability of those resources will depend on other Coast Guard priorities at the time.

Potential applicants to STEP are urged to review NVIC 01-04 and Application documents posted on the CG-3PSO-4 STEP web site (http://www.uscg.mil/hq/g-m/mso/step.htm), and to contact Ronald Jackson (202-372-1433; Ronald.P.Jackson@uscg.mil) or Richard Everett (202-372-1436; Richard.A.Everett@uscg.mil) with any questions.

Calendar of Events

- **August 16, 2007**
  ETV Stakeholders Meeting
  Holiday Inn BWI Airport Conference Center
  890 Elkridge Landing Road
  Linthicum, MD

- **September 11-13, 2007**
  Western Regional Panel on Aquatic Nuisance Species
  Honolulu, HI
  http://www.fws.gov/answest/

- **September 18-19, 2007**
  Mid-Atlantic Regional Panel on Aquatic Nuisance Species
  Annapolis, MD
  http://www.chesapeakebay.net/marp.htm

- **September 23-27, 2007**
  15th Annual International Conference on Aquatic Invasive Species
  Nijmegan, the Netherlands
  http://www.icais.org/

- **October 30-November 1, 2007**
  Gulf and South Atlantic Panel on Aquatic Nuisance Species
  Miami, FL
  http://nis.gsmfc.org/Meetings.shtm

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